

Temporal transfer, colloquially known as time travel, is a scientific procedure used to move from one point in chronological order to another, before or after starting position.

Beside one possible solution to the Time Travel paradox that I have already proposed (\*) in my Time Travel article published earlier on CNJ website, being creation of separate temporal branch, I got new idea what second solution may look if there is no chronological diversity: annihilation could be a process corresponding to the time travelers age - not immediate response to cause removal. Meaning, if you somehow go back in the past and stop your parents from conceiving you then you will not seize to be right that moment. Embryo will never be conceived and with each passing moment yourself will bygone equivalently. You will never get obliterated because of removing the cause of your existence. Your past will start disappearing together with your memories. You will continue to live but continuously forgetting everything you experienced and learned until preventing your birth to occur from which moment on only new formed memories will occupy your brain cells. Traces of your existence will steadily vanish and eventually no one will remember who you are.

Of course, simplest solution is an instant extinction but I am always trying to look beyond straightforward models.

In his theory of special relativity, A. Einstein discovered very interesting phenomenon called time dilation meaning that moving clocks tick slower than stationary ones. In theory of general relativity, he predicted that clocks

placed closer to the gravitational source will tick slower compared to a distant ones. Both predictions has been experimentally confirmed using GPS satellites: difference is observable but small. During 24 hours period, clocks on satellites tick 0,000007 seconds (7 microseconds) slower than ground ones but actual time dilation is 0.000038 seconds (38 microseconds) in favour of ground clocks. Enough to disrupt delicate positioning and communication systems, which requires regular synchronization, but insufficient for noticeable time travel effect. However, using much stronger gravitational pull, like found in the vicinity of a black holes, time travel to future is possible - as seen in the movie Interstellar.

Let us briefly dwell into the physics envisioned by Kip Thorne: main actor flies with spaceship "Endurance" to fictional supermassive black hole named Gargantua, having a 100 million solar masses and rotating at 99.8% speed of the light. I argue that it is not the black hole itself which rotates but rather its accretion disc. Anyway, Gargantua`s enormous gravitational pull makes surrounding objects to accelerate at 55% of C (planet) and 1/3 of C (spaceship) while maintaining stable orbits. This effect results in time moving slower for protagonists, compared to the time passage on Earth, which consequently makes them travel to the future.

Another type of experiment, that proves theory of relativity, relies on very precise atomic clocks in which Strontium atoms are trapped inside lattice structure produced by laser beams. Scientists measure frequency change between higher and lower levels of entrapment just millimeter apart from each other. Regardless of miniature redshift value, on  $10^{-19}$  scale, results confirm Einstein`s prediction. Improved experimental models will enable us to observe waves superposition and explore quantum coherence states.

In my previous Time Travel article, I have defined Time as one of a direct consequences of an energy transformation but not the precursor, effect but not the cause. Since velocity is a factor of energy transformation and time a factor of velocity, time is definitely a subfactor of energy transformation.

To explain time we need to explain energy.

What are the properties of time? It permeates and affects everything just like dark energy which makes me think that time is also a form of energy, maybe even dark energy itself. Locally, under gravitational influence and present acceleration, it has relativistic nature. Generally, from the moment of the Big Bang to the current cosmic border, it has universal value corresponding to the age of the Universe or approx. 13.8 billion years.

What forms of energy exist? Kinetic (including thermal), potential (either mechanical or chemical), electromagnetic, gravitational, nuclear, radiant and vacuum. Temporal?

Obviously, I am proposing two possible configurations: 1) Time is a subfactor, residue, invisible and repulsive leftover of an energy transformation stacking

in an intergalactic void or 2) Time is a form of an energy itself. Anyway, Time is directly related to an energy transformation.

In the singularity wavelength was zero, frequency infinite. With expansion of the Universe its wavelength increased while frequency decreased. The end of the spacetime is where wavelength becomes straight line (infinite) and frequency 0 (zero). Hence, Time on cosmic level is an oscillation of matter and energy dissolution. Actually, there is no Time as we imagine it to be. There is only time flow measuring a radioactive decay of the particles. Day and night are human made concepts - Sun shines all the way.

Humans could be the Universe creator, and destroyer, themselves. Sometime in the future, when science sufficiently advances mankind will be able to rip spacetime fabric apart using grand unification energy giving birth to the Big Bang, and maybe sealing their own fate as well.

Time and frequency are inversely proportional.

$$f = 1 / T$$

$$T = 1 / f$$

Max Planck formulated an equation relating energy (E) and frequency (f):

$$E = h \times f$$

where

$h$  = Planck's constant

$f$  = frequency

Let us join the two equations and relate Time with energy.

$$E = h \times 1 / T ; \times T$$

$$E \times T = h ; / E$$

$$T = h / E$$

Time is counteracted by energy - increasing an energy we lower the Time! It is like a playground seesaw: when energy is maximized - time is minuscule, insignificant for photon traveling at C. Inversely, when moving object slows

down it starts experiencing time more closely. When its speed reaches zero - time becomes infinite.

Simple formula  $t = d / v$  proves this.

$t$  = time

$d$  = distance

$v$  = velocity

In case of  $v = 0$  (for non-moving objects)  $t = d / 0$ .

How do we increase an energy level? Well, the faster an object moves the greater kinetic energy it possess. When speed reaches critical point (C) time will be minimized. Hypothetically, in case of surpassing C question is will time start "counting" backwards into the past or it will just get further reduced, endlessly adding decimal places. Since, nothing can travel faster than C an object breaking the barrier would experience time termination. What happens then? I guess, an object will enter hyperreality.

Because energy (velocity) and time are inversely proportional, as seen in formula  $T = h / E$  ( $t = d / v$ ), time could be considered a unit of latency

(passivity) - exact opposite of units serving to express energy and velocity (activity).

$$E_k = 1/2 m \times v^2$$

Notice that the kinetic energy increases with the speed squared, meaning an object with a double speed has four times bigger kinetic energy.

We can write this equation like this...

$$E_k = m/2 \times v^2$$

Meaning that the speed is 4 times bigger contributor than mass.

Hence, with enormous kinetic energy, future travel is possible but for crossing into the reverse state, traveling to the past, we need negative value of either mass or velocity. How could we falsify mass or velocity? Mass by switching charge of an atom, velocity by modulating energy frequency output.

Time dilation is achievable by increasing any form of energy not only kinetic. For example, vicinity of nuclear reactors could cause temporal desynchronization. Potential energy rise or electromagnetic field strengthening could do the same trick.

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\* People posed this paradox in a different forms but with the same problem: if you go back in time, visit the past and arrange that your parents never met and conceived you then you will, as a consequence, immediately cease to exist? You will promptly vanish into the obscurity like you never was? I will try to solve it. Time could be flexible branching as a tree. You will continue to exist in your separate time branch. You will never be conceived in the present. Every time travel creates new stream. The result are parallel worlds co-existing simultaneously in a different Time branches. I imagine the Time as a tree. There is a main part, General Time, out of which numerous fragments divide and subdivide on their own but are always connected to the substance. Everything is tied. Let us move a step further in the Time travel paradox. Someone else could come, maybe you from another reality, and stop the arrangement being done after it was done. Will that make you



appear again like you never disappeared? In this present Time branch, third, yes. In the former, second, you are gone. In the first you exist. Perhaps... You could be your father? Or your mother in case you are female. Or both if you change sex... Meaning that you are all three: you could be your father and your mother and their offspring. Imagine this triangle (triquetra): you are your parents and their child. You alone arranged your conception by traveling through the Time. You alone are the origin of yourself. Is it really possible to create yourself, by using the Time travel phenomenon, out of nothing? If so it is called the temporal knot.